

REMARKS

Claims 1 and 13 have been amended. Support for the amendments to claims 1 and 13 may be found throughout the specification. Claim 7 has been cancelled without disclaimer of the subject matter contained therein. No new matter has been added. Upon entry of this Amendment, claims 1-6, 8-29, and 32 remain pending.

In the Office Action, claims 1, 3-8, 12, and 13 were rejected under 35 U.S.C. § 102(b) as being anticipated by Mori et al. ("Mori"), U.S. Patent No. 5,906,429. Applicants respectfully traverse this rejection.

Independent claim 1 recites a lithographic apparatus that includes, *inter alia* "at least one heater for heating said collector; and a controller configured to control the heater to selectively heat said collector, even when said collector receives substantially no radiation from said first radiation source." Mori does not disclose or suggest all of the features of claim 1.

Mori discloses an optical illumination device that reflects and condenses light from a mercury-arc lamp by a light reflecting and condensing member. (Mori at Abstract.) In one embodiment, "a heating device may also be provided to prevent white ammonium sulfate powder from adhering to the elliptical mirror 2A." (Mori at col. 14, lns. 25-27.) Mori explains that temperature data that is detected by temperature sensors 11A and 11B is provided to a temperature controller 12, which "regulates the amount of current to be supplied to the heating coil 10 to maintain the temperature of the elliptical mirror 2A at a temperature of 120° C (the decomposition temperature of ammonium sulfate) or higher." (Mori at col. 14, lns. 30-35.) Mori also explains that "[t]he heating coil 10 need not be subjected to very high current because the elliptical mirror 2A is near the mercury-arc lamp 1 that serves as a heat source." (Mori at col. 14, lns. 35-38.) Mori further explains that "[a] heat insulator can be provided instead of the heating device for the light reflecting and condensing element or elliptical mirror 2A." (Mori at col. 14, lns. 39-41.) Mori does not disclose or suggest a controller that is configured to control the heating coil to selectively heat elliptical mirror, even when the elliptical mirror receives substantially no radiation from the mercury-arc lamp, and there would be no motivation to do so in view of the purpose for providing such a heating device in Mori.

Accordingly, Applicants respectfully submit that claim 1 and the claims that depend from claim 1 are patentable over Mori because Mori does not teach – at least – a lithographic apparatus that includes "a controller configured to control the heater to selectively heat said

collector, even when said collector receives substantially no radiation from said first radiation source,” and respectfully request that the rejection to claims 1, 3-6, 8, and 12 be withdrawn.

Independent claim 13 recites a collector for use in a lithographic apparatus. The collector includes, *inter alia*, “a heater thermally coupled to said reflecting elements; and a controller configured to control the heater to selectively heat said reflecting elements, even when said reflecting elements receive substantially no radiation from said radiation source.”

Mori is discussed above. As recited by claim 13, a controller is configured to control the heater to selectively heat the reflecting elements, even when the reflecting elements receive substantially no radiation from the radiation source. Because Mori does not disclose or suggest a controller that is configured to control the heater to selectively heat the reflecting elements, even when the reflecting elements receive substantially no radiation from the radiation source, Applicants respectfully submit that claim 13 is patentable over Mori. Accordingly, Applicants respectfully request that the rejection to claim 13 be withdrawn.

In the Office Action, claim 2 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Mori in view of Sogard (U.S. 2005/0099611). Applicants respectfully traverse this rejection.

Claim 2 depends from claim 1. As discussed above, claim 1 is patentable over Mori. Sogard does not make up for the deficiencies of Mori. Mori is discussed above. Sogard teaches the use of cooling channels and optional heaters for an EUV mirror to eliminate global thermal distortion. (Sogard at [0004].) As described by Sogard, the “heat source creates thermal stresses in the mirror opposite to those created by the illumination irradiating the reflective side, thereby canceling their effects.” (Sogard at [0028].) Thus, Sogard teaches the use of a heat source while the mirror is being irradiated. Sogard provides no motivation to heat the mirror with the heat source when the mirror is not being irradiated.

Accordingly, Applicants respectfully submit that because the combination of Mori and Sogard do not teach all of the features of claim 2, claim 2 is patentable over Mori in view of Sogard, and respectfully request that the rejection to claim 2 be withdrawn.

In the Office Action, claims 9-11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mori in view of Bade et al. (“Bade”) (U.S. 2003/0223136). Applicants respectfully traverse this rejection.

Claims 9-11 depend from claim 2, which depends from claim 1. As discussed above, claim 1 is patentable over Mori, and claim 2 is patentable over Mori in view of Sogard. Applicants note that the Examiner has not rejected claims 9-11 under 35 U.S.C. § 103(a) as being unpatentable over Mori in view of Sogard and further in view of Bade, but has instead

rejected claims 9-11 as being unpatentable over Mori in view of Bade. As conceded by the Examiner, Mori does not disclose the heater which includes a second radiation source. Bade does not make up the deficiencies of Mori. Mori is discussed above. Bade discloses a heated mirror for a vehicle. (Bade at [0001] – [0003].) Bade does not disclose or suggest 1) “a controller configured to control the heater to selectively heat said collector, even when said collector receives substantially no radiation from said first radiation source,” as recited by claim 1, or 2) “said heater includes a second radiation source,” as recited by claim 2.

Accordingly, Applicants respectfully submit that claims 9-11 are patentable over Mori in view of Bade and respectfully request that the rejection to claims 9-11 be withdrawn.

In the Office Action, claims 14-29 and 32 were rejected under 35 U.S.C. §103(a) as being unpatentable over Mori in view of Sogard (U.S. 2003/0235682, hereinafter “Sogard ‘682”). Applicants respectfully traverse this rejection.

Independent claim 14 recites a method of manufacturing a device that includes, *inter alia*, “maintaining the collector at a substantially constant operating temperature by selectively heating the collector, even when the collector receives substantially no radiation from the first radiation source.”

Mori is discussed above. As conceded by the Examiner, Mori does not disclose selectively heating the collector, even when the collector receives substantially no radiation from the first radiation source, as recited by claim 14. Applicants respectfully submit that there is no motivation to combine Mori with Sogard ‘682.

Sogard ‘682 teaches an optical assembly 24 that collects and focuses an illumination beam 40 of radiation that is reflected from a reticle 12 to a wafer 14. (Sogard ‘682 at [0044].) Hence, the optical assembly 24 is part of an illumination system that is between the reticle and the wafer; it is not part of a collector. The optical assembly 24 includes an element control system 32 that reduces thermal distortions and/or optical aberrations in one or more of the optical elements 28 in the optical assembly. (Sogard ‘682 at [0036].) The element control system 32 includes a thermal adjuster 48 that selectively heats portions of one or more of the optical elements 28. (Sogard ‘682 at [0056]-[0057].) This way, the portions of the optical elements 28 that are not illuminated and heated by the illumination beam 40 of radiation may also be heated to minimize thermal distortions of the optical elements 28. (Sogard ‘682 at [0058]-[0059].) There is no indication that such an element control system would be suitable for, or needed in, a collector.

The heating coil 10 of Mori is shown to be provided to the entire elliptical mirror 2A. (Mori at FIG. 11.) Therefore, there is no need to add the thermal adjuster of Sogard ‘682 to

selectively heat portions of the elliptical mirror of Mori that are not otherwise heated, because the heating coil 10 heats the entire elliptical mirror. As such, Applicants respectfully submit that there is absolutely no motivation to combine Mori with Sogard '682.

Accordingly, Applicants respectfully submit that claim 14 and claims 15-29 that depend therefrom are patentable over Mori in view of Sogard '682, and respectfully request that the rejection to claims 14-29 be withdrawn.

Independent claim 32 recites a method of manufacturing a device that includes, *inter alia*, "maintaining the collector at a substantially constant operating temperature by selectively heating the collector, even when the collector receives substantially no radiation from the first radiation source."

Mori and Sogard '382 are discussed above. Applicants respectfully submit that claim 32 is patentable over Mori in view of Sogard '382, because there is absolutely no motivation to combine Mori with Sogard '382. Accordingly, Applicants respectfully request that the rejection to claim 32 be withdrawn.

All rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited. If any point remains at issue which the Examiner feels may best be resolved through a personal or telephone interview, please contact the undersigned at the telephone number below.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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